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GEORGIA'S JOB TAX CREDIT : AN ANALYSIS OF THE CHARACTERSTICS OF ELIGIBLE FIRMS

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EXECUTIVE SUMMARY

The Job Tax Credit (JTC), part of the Georgia Business Expansion Support Act, is a tax credit for the creation of new jobs in six qualifying industries: manufacturing, goods processing, warehousing and distribution, information processing, research and development, and tourism. The credit amount is higher for jobs created in less developed counties.

This study examines the characteristics of firms eligible to take the JTC between 1993 and 1995. Only a small portion of the firms that were eligible actually took the JTC. Descriptive statistics show that the largest proportions of firms taking the JTC are small (having fewer than 100 workers) and are located in less developed (Tier 1) counties. A majority of the firms taking the JTC are manufacturing firms. The JTC moderately decreases the tax burdens of participating firms and is an extremely small proportion of a firm's payroll. Other credits offered under the Georgia Business Expansion Act are not widely utilized by firms taking the JTC.

Regression analysis shows that smaller firms, firms with higher tax liabilities, firms located in less developed counties, firms headquartered in Georgia, and firms which took the JTC in a previous year have a higher probability of taking the JTC. Start-up firms relative to existing firms have a lower probability of taking the JTC.

Increased awareness of the JTC among firms and simplification of the application process may increase the level of participation in the program. Additional research is needed to determine if lowering the minimum job creation criteria increased the participation rate of firms and the number of jobs created.

GEORGIA'S JOB TAX CREDIT: AN ANALYSIS OF THE CHARACTERISTICS OF ELIGIBLE FIRMS

Introduction

Although tax incentives are a prominent part of many state economic development strategies, little research has focused on the characteristics of firms that take advantage of specific tax incentives such as job tax credits, investment tax credits, and training tax credits, or the role of these specific incentives in increasing the level of employment in a state.[1] Many studies on economic development policies use aggregate state-level or MSA-level data to determine their effect on economic growth and job creation; Bartik (1991) provides an overview of such studies. None of these studies has examined the characteristics of firms that are eligible to participate in tax incentive programs such as Georgia's job tax credit (JTC). This study provides an overview of Georgia's JTC program, examines the characteristics of firms that were eligible to take the JTC in Georgia between 1993 and 1995, provides a brief review of the effectiveness of similar programs implemented at the federal and state levels, and makes recommendations for improving Georgia's JTC program.

Brief History and Structure of Georgia's JTC

Georgia's Job Tax Credit (JTC) was instituted in 1990. The primary purpose of the program is to increase employment in Georgia's 40 most distressed counties, designated as Tier 1 counties. Business establishments creating ten or more jobs are eligible to take the JTC for five years, if the

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[1] Here I focus on an incentive program that is available to broad segments of the business community and not incentive packages that are offered to one or several companies -- such as the incentive package that Alabama offered Mercedes -- which may include job tax credits, investment tax credits, training tax credits and/or other tax abatements.

jobs are maintained, with a ten year carryforward for unused credit.[2] In 1993 the scope of the JTC expanded to include 80 counties, where forty of the counties were designated as Tier 1 counties and forty as Tier 2 counties. In 1993 and 1994, firms in Tier 1 counties received $2000 per job created, and firms in Tier 2 counties received $1000 per job created. In 1995, a third tier was added so that eligible establishments in each of Georgia's counties could apply for the credit. The dollar amount of the credit and the minimum job creation criteria differ for each tier. Table 1 shows the minimum job creation criteria and the credit amounts for the 1991 through 1997 tax years.

Table 1. JTC Amounts and Minimum Job Creation for Eligibility

Tax Year	Tier 1 Counties	Tier 2 Counties	Tier 3 Counties
1991	Jobs: 10 Credit: $1000	Not Eligible	Not Eligible
1992	Jobs: 10 Credit: $1000	Not Eligible	Not Eligible
1993	Jobs: 10 Credit: $2000	Jobs: 10 Credit: $1000	Not Eligible
1994	Jobs: 10 Credit: $2000	Jobs: 10 Credit: $1000	Not Eligible
1995	Jobs: 10 Credit: $2500	Jobs: 25 Credit: $1500	Jobs: 50 Credit: $500
1996	Jobs: 5 Credit: $2500	Jobs: 25 Credit: $1500	Jobs: 50 Credit: $500
1997	Jobs: 5 Credit: $2500	Jobs: 15 Credit: $1500	Jobs: 25 Credit: $500

[2] A firm may be a group of several business establishments *i.e.*, branch plants. A multi-establishment firm must create the required minimum number of jobs in a particular establishment to qualify for the JTC. In this analysis the term firm refers to the taxed entity and establishment refers to a particular plant. The terms establishment and business establishment are used interchangeably.

Initially, the credit was limited to manufacturing, warehousing and distribution, goods processing, and research and development industries. In 1993, the tourism industry became eligible for the JTC, and in 1994 the information processing industry became eligible. Through December 31, 1997, a special provision allowed any firm that created 10 or more jobs in Tier 1 counties to take the JTC regardless of industry classification.[3]

In 1994, the JTC was incorporated into the Georgia Business Expansion Support Act (BEST), which was amended in 1995 and 1996.[4] BEST is a targeted incentive package designed to encourage the start up and expansion of firms in particular industries.[5] BEST consists of four tax credits: (1) Job Tax Credit, (2) Investment Tax Credit, (3) Retraining Tax Credit, and (4) Child Care Credit. The tax credits offered under BEST operate through the Georgia Corporate Income Tax. The JTC is the cornerstone of BEST and is the only credit that is specifically identified on the corporate income tax return.[6]

The structure of the JTC greatly influences its economic impact and effectiveness in creating jobs. Some relevant economic features of Georgia's Job Tax Credit include the following:

(1) Georgia's JTC is a tax credit available for the creation of new full-time jobs.

(2) An establishment must maintain a minimum average monthly increase of jobs for two full years before it can take the JTC. See Table 1 for the minimum job creation criteria for each Tier.

(3) The JTC can be taken for five years if the jobs are maintained. For example, if a firm in an eligible industry in a Tier 1 county chose 1992 as the base year, created a minimum of 10 new full-time jobs in 1993 and maintained them in 1994, it can claim the JTC on its 1994 tax

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[3] This special provision for Tier 1 counties ended December 31, 1997 and has been extended beginning January 1, 1999. See Georgia General Assembly House Bill 1596 for the legislation.

[4] See Georgia General Assembly House Bills 240, 263, 1399, 536, 1527, and 336 for the legislation.

[5] The BEST targets specific industries and counties, **not** particular types of workers.

[6] Ihlanfeldt (1994) provides a more detailed description of Georgia's incentive package. Florida, North Carolina, South Carolina, Mississippi, Maryland, and Virginia are among the southern states that offer some form of employment tax credit.

return.[7] If the establishment maintains these ten jobs, it can continue to take the JTC through the 1998 tax year. The above provisions eliminate the incentive for churning i.e., where establishments hire workers, fire them, and then hire new workers to continuously take advantage of the credit.

(4) The minimum number of new jobs that a business establishment must create to qualify for the JTC and the credit per job differs depending on the tier designation of the county in which the establishment is located (Table 1). Establishments located in Tier 1 counties have to create fewer jobs to qualify for the JTC, and the credit per job is higher relative to the other tiers. Through this mechanism, the JTC targets business establishments in less developed counties.

(5) With the exception of firms in Tier 1 counties, the JTC is limited to certain industries, currently manufacturing and distribution, warehousing, goods processing, tourism, research and development, and information processing. In Tier 1 counties firms in any industry can take the JTC.

(6) Fifty percent of a firm's income tax liability is the maximum JTC a firm can take in any year.

(7) The JTC is nonrefundable, but unused JTC can be carried forward for up to ten years.

(8) Firms can file a Notice of Intent to maintain Tier status. For example, a firm would file a Notice of Intent for a participating establishment located in a Tier 1 county so that if the county is classified as Tier 2 the following year, the firm can continue to claim the Tier 1 credit amount. This provision allows the firm to claim the same credit amount per job created regardless of changes in the Tier designation of the county where the establishment is located.

(9) The JTC does not require firms to sign an *a priori* contract guaranteeing the creation of a set number of jobs. Firms can track employment and decide to claim the JTC after the legislated number of jobs are created.

(10) Multi-establishment firms may take the JTC for jobs created in any establishment that meets the job creation criteria.

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[7] A firm's increase in employment is determined by calculating the average monthly employment over the firm's fiscal year.

Characteristics of Eligible Firms

A. Who takes the JTC?

Information on the use of the JTC was compiled from the Georgia corporate income tax returns of firms that took the Job Tax Credit. The data consist of all the firms that took the JTC in 1993,1994, and 1995.

Eighty-two firms (0.01 percent of all taxable firms in the state) took the JTC in 1993, 1994, and/or 1995: 60 C Corporations, 21 S Corporations and one Partnership took the credit (Table 2A). These firms may have multiple establishments that are eligible to take the JTC. Table 2A also shows the total number of jobs that were credited on the corporate income tax returns and the tax expenditure (*i.e.*, loss of tax revenue) resulting from the JTC.

Table 2A. Breakdown of Firms Filing for the JTC

Year*	Jobs Credited	Tax Expenditure	Carryforward	C Corporations	S Corporations	Partnerships
1993	1708	$656,552	$ 2,108,066	17	8	0
1994	3309	$1,394,744	$ 3,797,643	19	9	0
1995	4578	$2,055,063	$ 4,364,754	24	4	1
TOTAL	9575	$4,106,359	$10,270,463	60	21	1

* Since a firm's fiscal year may not correspond to the calendar year, I assigned firms to the calendar year most closely corresponding to their fiscal year. As a result my tabulations may differ slightly from those available from the Georgia Department of Revenue.

The ES202 data from the Georgia Department of Labor were used to identify firms that were eligible for the JTC between 1993 and 1995 but did not take it.[8] Approximately 50,000

[8] The ES202 data from the Georgia Department of Labor contains information on monthly employment levels, industry, unemployment tax payments, total wage bill and county for each establishment in Georgia.

establishments (7 percent of all taxable establishments in the state) in eligible industries operated in the state of Georgia between 1993 and 1995. Of these establishments approximately 780 were eligible for the credit but did not take it. Estimates of establishments eligible to take the JTC for at least one year between 1993 and 1995 are: 70 (of 5400) establishments in the tourism industry, 5 (of 908) establishments in the research and development industry, 700 (of 17,700) establishments in the manufacturing industry, 9 (of 594) establishments in the warehousing and distribution industry, and 147 (of 24,914) establishments in the information and goods processing industries.

After identifying firms that were eligible but did not take the JTC, data were collected from Georgia Corporate Income Tax returns for a sample of eligible firms that did not take the JTC between 1994 and 1995. The sample was drawn randomly from a list of eligible firms compiled using the ES202 data. The sample consists of 69 C corporations and 13 S corporations.[9] Table 2B shows the breakdown of eligible firms not taking the JTC and the potential tax expenditure had these firms taken the credit.

Table 2B. Breakdown of Eligible Firms Not Filing for the JTC*

Year	Jobs Credited	Potential Tax Expenditure	Carryforward	C Corporations	S Corporations	Partnerships
1994	744	$922,000	--	16	0	0
1995	12539	$8,071,000	--	53	13	0
TOTAL	13283	$8,993,000		69	13	0

* The statistics for eligible firms not taking the JTC used in this analysis are derived from a sample of firms that were eligible to take the JTC but did not.

[9] Since the tax forms for S corporations often do not contain information needed for the empirical model, these firms were undersampled.

The participation rate in the JTC program among eligible establishments is extremely low (about 19 percent). This finding suggests that many firms either do not know about the JTC or do not find it advantageous to take the credit. Depending on the organizational structure of the firm, managers in charge of hiring decisions may not be aware of tax advantages like the JTC. The credit will not be useful to a firm that has no tax liability or a very low tax liability each year, state taxes may be such a small portion of total cost for the firm that the reduction in tax liability due to the JTC is insignificant for many firms, or firms may not take the credit because they fear that taking the credit will increase their chances of audit. The frequent legal changes in the minimum job creation criteria and credit amounts increase the perceptions of uncertainty surrounding the program may have served as a deterrent to some firms.

Because the participation rate is so low, in effect the state does not pay for jobs that nonparticipating firms create. This is advantageous to the state since these firms would have created these jobs even if the credit were not available. However, these firms may have created a larger number of jobs if they had been aware of the JTC.

Other corporate income tax credits (the retraining tax credit, child care credit, and Basic Skills education credit) are not widely utilized by firms that took the JTC; only 17.5 percent of the firms taking the JTC took another credit in addition to the JTC. Prior to 1996, firms could not take both the investment tax credit and the job tax credit in the same year.

Table 3A shows the Tier rank of the establishments that took the JTC. (Tier 1 counties are the least developed.) The structure of the JTC insures that establishments located in Tier 1 counties receive a higher credit per job created. A majority of the establishments taking the JTC, 69 percent, were located in Tier 1 counties. A majority of the jobs attributed to the JTC (66 percent) were

located in Tier 1 counties. These statistics suggest that firms with locations in Tier 1 counties are more likely to take the JTC.

The JTC reduced the effective (average) tax rate for C corporations from 3.06 percent to 1.80 percent for the 1993-95 period.[10] This finding suggests that firms taking the JTC receive an average tax savings of $1.26 per $100 of tax liability over firms that do not take the JTC, assuming that the effective tax rate for firms taking and not taking the JTC is the same.

Table 3A. Tier Rank* of Firms Filing for JTC and Jobs Credited

Tax Year	Tier 1	Tier 2	Tier 3
1993	25 firms 1571 jobs	7 firms 137 jobs	0
1994	40 firms	12 firms	0
1995	39 firms	18 firms	9 firms
Total	104 firms**	37 firms	9 firms

*The Tier rank is derived from the county where an establishment is located.
**Many of the firms in the dataset have multiple establishments located in more than one county.

Table 3B. Tier Rank of Firms Eligible but not Filing for the JTC

Tax Year	Tier 1	Tier 2	Tier 3
1993	NA	NA	0
1994	6 firms	11 firms	0
1995	20 firms	33 firms	24 firms
Total	26 firms	44 firms	24 firms

*Jobs that would have been credited if the firms had applied for the JTC.
NA: Not Available

[10] I calculated the effective tax rate as tax liability/federal taxable income. Information on total income was not available on the Georgia's corporate income tax forms. Information on neither total income nor taxable income was available for S corporations or Partnerships.

Tables 4 and 5 show the headquarters' location and the industry for establishments taking the JTC. A majority of the establishments, 66.2 percent, were headquartered in Georgia. Most of the establishments (91.3 percent) were in the manufacturing industry. Apparel manufacturing establishments represent 30.6 percent of the manufacturing establishments taking the JTC , followed by the manufacturers of lumber and wood products (17.3 percent). Information on the skill level of the jobs created or on the wages earned by new workers in establishments taking the JTC is not available. However jobs in the manufacturing industry may be relatively low-skill, low-wage jobs, which may not be the types of jobs that policy makers want to attract. Firms in the tourism and research & development industries are eligible to take the JTC, however, no firms in these industries applied for the credit. Although establishments in Tier 1 counties in any industry which create and maintain a minimum of 10 jobs are eligible to take the JTC, only two corporations outside the six qualifying industries took advantage of this clause, an eating and drinking establishment with three locations and a business services corporation. Approximately, 430 establishments (in any industry) located in Tier 1 counties were eligible to take the JTC for at least one year during the 1993-95 time period. Research has shown that young firms increase employment at a faster rate than older firms. Therefore, younger firms may be more likely to take the JTC. Table 6 shows no clear evidence that younger or older firms are more likely to take the credit.

Table 4. Headquarters Location for Firms

Headquarters Location	Number Filing the JTC	Number Eligible but not Filing for the JTC
Georgia	51	44
South (TN, FL, DE, AK, KY, NC)	9	14
Northeast (CT, PA, NJ, NY, RI)	6	9
Midwest (IL, MN, MI, IN, OH)	10	12
West (CO)	1	3
TOTAL	77	82

Table 5. Industry of Establishments for Corporations taking the JTC (by 2 digit SIC code)

Type of Establishment	2 digit SIC	Number of Eligible Establishments	
		Filing JTC	Not Filing JTC*
Manufacturing (Food)	20	13	9
Manufacturing (Textile Mill Products)	22	11	15
Manufacturing (Apparel)	23	46	12
Manufacturing (Lumber and Wood Products)	24	26	7
Manufacturing (Furniture and Fixtures)	25	4	3
Manufacturing (Paper and Allied Products)	26	3	1
Manufacturing (Chemicals and Allied Products)	28	1	5
Manufacturing (Rubber and Plastic Products)	30	3	4
Manufacturing (Stone, Clay, and Glass Products)	32	1	2
Manufacturing (Primary Metal Industries)	33	1	2
Manufacturing (Fabricated Metal Products)	34	11	8
Manufacturing (Industrial Machinery and Equipment)	35	2	2
Manufacturing (Electronic and Electrical Equipment)	36	7	3
Manufacturing (Transportation Equipment)	37	4	4
Manufacturing (Instruments and Related Products)	38	0	4
Manufacturing (Miscellaneous)	39	1	2
Communication (Public Utilities)	48	2	0
Wholesale Trade (Durables)	50	1	12
Wholesale Trade (Nondurables)	51	9	2
Eating and Drinking Places	58	3	0
Business Services	73	1	0
Total		150	97

*Author's calculations from the ES202 dataset.

Table 6. Age of Firms

Age of Firm in 1995	Number of Firms Filing for JTC	Number of Eligible Firms Not Filing for JTC
5 years	19	16
6 to 10 years	12	20
11 to 20 years	11	17
21 to 30 years	19	13
> 30 years	7	13
Unknown	7	15
TOTAL	75	94

Table 7 suggests that establishments taking the JTC are more likely to start-up in the Tier 1 counties located in the southern part of the state. Eleven of the 20 start ups occurred in counties in South Georgia. Only 5 mergers took place among firms which took the JTC during the 1993-95 period. In contrast to the twenty start ups that occurred in eligible firms taking the JTC, 34 start ups occurred among firms that were eligible but did not take the credit. Whether or not these start ups and mergers are directly related to the JTC can not be determined from these descriptive statistics.

Tables 8 through 11 show the financial characteristics of firms taking the JTC. Total Net Worth and Georgia Net Worth varies greatly from negative to over $100 million; 29 percent of the firms taking the JTC have negative Total Net Worth and Georgia Net Worth.[11] A majority of firms taking the JTC have inventories of less than $1 million (55.3 percent of the firms) and capital stock between $0 and $500,000 (50.7 percent). These statistics indicate that many firms taking the JTC are small. The distribution is similar for eligible firms not taking the JTC.

Tables 12A and 12B show the tax liability of firms taking the JTC. Fifty percent of the firms taking the JTC had no tax liability before filing for the credit, which means that these firms took a carry forward of the unused credit. The JTC appears to have a moderate effect on the distribution of tax burdens. For firms with a positive income tax liability, the JTC is 19 percent of the average firm's precredit income tax liability. The maximum ratio of JTC to income tax liability is 0.5 since the maximum credit that a firm can claim is half of its income tax liability.

[11] Georgia Net Worth is that portion of a firm's Total Net Worth that is taxable in Georgia. For firms that have no establishments outside of Georgia, Georgia Net Worth is equal to Total Net Worth.

Table 7. New Start-up Establishments, Spin-off Establishments, and Mergers

County	Tier	Location	Number and Type of Establishment	
			Eligible Filing JTC	Eligible not Filing JTC
Appling	1	South	2 Start-up	1 Start-up
Atkinson	1	South	1 Merger	
Bartow	2	Northwest		1 Start-up
Brantley	1	South	1 Start-up	
Brooks	2	FL border		2 Start-up
Burke	1	SC border	1 Start-up	
Chatham	3	East		1 Start-up
Chattooga	2	Northwest		1 Start-up
Clinch	1	FL border	1 Start-up	
Cobb	3	Atlanta MSA		4 Start-up
Colquitt	2	South		2 Start-up
Crisp	1	South	2 Start-up	1 Start-up
DeKalb	3	Atlanta MSA	1 Start-up	
Dodge	1	South	1 Start-up	
Dooly	1	South	1 Spin-off	
Dougherty	2	South		1 Start-up
Early	1	AL border		1 Start-up
Fulton	3	Atlanta MSA		2 Start-up
Greene	1	East	1 Start-up	
Gwinnett	3	Atlanta MSA		1 Start-up
Habersham	3	Northeast		1 Start-up
Hancock	1	East	1 Start-up	
Haralson	2	AL border	1 Start-up	1 Start-up
Jasper	2	East of Atl	1 Start-up	
Jefferson	1	East	1 Start-up	1 Start-up
Jenkins	1	East	1 Merger	
Laurens	2	South		2 Start-up
Miller	2	South	1 Merger	
Monroe	3	South Central		1 Start-up
Morgan	2	East of Atl		1 Start-up
Murray	2	TN border		2 Start-up
Muscogee	2	AL border		1 Start-up
Peach	2	South Central		1 Start-up
Pierce	2	South	1 Start-up	
Randoph	1	South		1 Start-up
Taylor	1	West	1 Start-up	
Telfair	1	South	1 Merger	
Tift	2	South	1 Start-up	2 Start-up
Troup	1	AL border		2 Start-up
Turner	1	South	1 Start-up; 1 Merger	
Worth	1	South	1 Start-up	

Table 8. Total Net Worth

Net Worth (dollars)	Number of Firms Filing JTC	Percent	Number of Eligible Firms Not Filing JTC	Percent
< 0	44	29.3	22	23.4
0 to $500,000	15	10.0	8	8.5
$500,000 to $1 million	13	8.7	3	3.2
$1 to $25 million	44	29.3	26	27.6
$25 to $100 million	9	6.0	12	12.7
> $100 million	25	16.7	23	24.4

Table 9. Georgia Net Worth

GA Net Worth (dollars)	Number of Firms Filing JTC	Percent	Number of Eligible Firms Not Filing JTC	Percent
< 0	44	29.3	22	23.4
0 to $500,000	20	13.3	9	9.6
$500,000 to $1 million	15	10.0	3	3.2
$1 to $25 million	52	34.7	40	42.5
$25 to $100 million	8	5.3	13	13.8
> $100 million	11	7.3	7	7.4

Table 10. Inventories

Inventories (dollars)	Number of Firms Filing for JTC	Percent	Number of Eligible Firms Not Filing for JTC	Percent
< $50,000	61	40.7	31	32.9
$50,000 to $500,000	11	7.3	6	6.3
$500,000 to $1 million	11	7.3	2	2.1
$1 to $50 million	40	26.7	33	35.1
$50 to $100 million	9	6.0	7	7.4
> $100 million	18	12.0	15	15.9

Table 11. Capital Stock

Capital Stock (dollars)	Number of Firms Filing JTC	Percent	Number of Eligible Firms Not Filing JTC	Percent
< 0	39	26.0	17	18.1
0 to $500,000	76	50.7	51	54.2
$500,000 to $1 million	7	4.7	9	9.6
$1 to $25 million	17	11.3	12	12.7
$25 to $100 million	4	2.7	1	1.1
> $100 million	7	4.7	4	4.2

Table 12A. Tax Liability Before and After Filing for the JTC

	Before Filing		After Filing JTC	
Tax Liability (dollars)	Number	Percent	Number	Percent
$0	76	50.7	78	52.0
$1 to $5000	5	3.3	14	9.3
$5001 to $10000	10	6.7	4	2.7
$10001 to $30000	11	7.3	16	10.7
$30001 to $50000	6	4.0	7	4.7
$50001 to $100000	12	8.0	7	4.7
$100001 to $1000000	21	14.0	17	11.3
> $1000000	9	6.0	7	4.7

Table 12B. Tax Liability of Eligible Firms not Filing for the JTC

Tax Liability (dollars)	Number	Percent
$0	54	57.4
$1 to $5000	5	5.3
$5001 to $10000	1	1.1
$10001 to $30000	4	4.3
$30001 to $50000	4	4.3
$50001 to $100000	6	6.4
$100001 to $1000000	12	18.1
> $1000000	3	3.2

The JTC is an extremely small proportion of a firm's total payroll. As Table 13 shows, the JTC is only 0.62 percent of the payroll for the average firm and a maximum of 8.1 percent of payroll. While the credit is a substantial proportion of the average firm's tax liability, it is only a minuscule proportion of its labor costs.

While the definition of "small business" varies in the literature, a standard definition is that a business with less than 100 employees is classified as small. A striking result of this analysis is that 47 percent of the establishments of firms taking the JTC have 100 or fewer employees. Tables 14A and 14B show the total number of employees in establishments eligible to take the JTC. Only sixteen percent of the establishments of the firms taking the JTC have more than 500 employees.

The structure of the JTC causes inequities among firms in the same industries but in different locations, firms in different industries that increase employment by the same amount, new firms versus old firms, etc. Firms in the same industry but in different locations (Tier 1 counties versus Tier 3 counties) that take the JTC are treated differently under the tax system. Firms in nonqualifying industries, such as retail and service-based industries, which may be creating large numbers of jobs are not eligible to take the tax credit. Technically, firms in these industries located in Tier 1 counties are eligible to take the credit, but only two firms did (as discussed above). In addition, firms that start up receive a greater benefit from the JTC than existing firms since startups can take a credit for total employment. However, the purpose of the JTC is to decrease unemployment in the state and particularly in less developed counties, so equitable tax treatment may be a secondary consideration.

Table 13. Job Tax Credit as a Percent of Total Payroll*, Participating Firms, 1993-1995

	Number	Average (%)	Minimum (%)	Maximum (%)
All firms taking JTC	103	0.62	0	8.1
Tier 1 firms	69	0.24	0	8.1
Tier 2 firms	26	0.44	0	2.1
Tier 3 firms	8	0.24	0	1.2

* Payroll includes part-time and full-time workers.

Table 14A. Employment in Establishments Filing for the JTC

Number of Employees	1993	1993	1994	1994	1995	1995
Category	Number	Percent	Number	Percent	Number	Percent
< 100	15	46.9	24	46.2	31	47.7
100 to 200	9	28.1	10	19.2	12	18.5
200 to 500	5	15.6	10	19.2	9	13.8
> 500	3	9.4	8	15.4	13	20.0

Table 14B. Employment in Establishments Eligible but not Filing for the JTC

Number of Employees	1993	1993	1994	1994	1995	1995
Category	Number	Percent	Number	Percent	Number	Percent
< 100	--	--	7	41.2	25	32.5
100 to 200	--	--	2	11.8	11	14.3
200 to 500	--	--	5	29.4	20	26.0
> 500	--	--	3	17.6	21	27.3

Administrative costs are greatly influenced by the structure of the JTC. Of the JTC forms filed between 1993 and 1995, 62.7 percent were completed incorrectly and had to be recalculated by officials in the Georgia Department of Revenue. This finding indicates that the cost to the government of administrating the credit could be lowered by simplifying either the form or method used to calculate the JTC.

The information required to file for the JTC - monthly employment level and industry - is the same information that is required to file unemployment insurance tax payments, so the costs to the firm associated with participating in the JTC program should be relatively low. However, no information is available on the costs to the firm of filing for the JTC.

B. Empirical Model

The purpose of the empirical model is to determine the importance of each firm characteristic, holding other characteristics constant, in a firm's decision to take the JTC. The empirical model estimates the probability that a firm, which meets the eligibility criteria, will take the JTC. A logit model is used to determine the probability of a firm's taking the JTC, given the firm's size, location, and tax characteristics. The details of the estimation are presented in the Appendix.

Marginal effects depict how the probability of taking the JTC changes when firm characteristics are slightly altered. [12] For the sample of firms used in this analysis, which consists of 60 eligible establishments that took the credit and 83 eligible establishments that did not take the credit, results of the estimation show that the representative eligible firm has a 0.49 probability of

[12] Marginal effects were calculated for a representative firm using the mean value of the variables. For dummy variables a 1 or 0 was used depending on which value was closest to the mean.

taking the JTC. As Table 15 indicates, relatively large changes in employment, tax liability, and rank have a small effect on a firm's probability of taking the JTC.

The number of employees is included as a proxy for firm size to determine if larger or smaller firms are more likely to take the JTC. Since firms must create a minimum of 10, 25, or 50 jobs depending on the Tier rank of the county where the firm is located, many small firms are automatically eliminated from the program. Results from logit estimation reveal that firm size is significant and negatively related to the likelihood of taking the JTC: smaller firms are more likely to take the JTC. The marginal effects show that increasing the level of employment by 100 workers decreases the probability of taking the JTC by 2.4 percentage points.

Table 15. Marginal Effects

Changes	Effect on Probability of Taking JTC
Increases Employment by 100 workers	-0.0239
Decreases Employment by 100 workers	0.0239
County Increases Ranking within Tier by 10* (county more developed)	-0.0282
County Decreases Ranking within Tier by 10 (county less developed)	0.0282
Were headquartered outside GA	-0.2577
Increases Tax Liability by $10,000	0.0097
Increases Tax Liability by $50,000	0.0488
Had taken the JTC previously	0.4345
Had been a start up	-0.2598

* I use the continuous ranking of each county within the three Tiers rather than the Tier rank of 1, 2 or 3 in this analysis. Tier 1 counties are ranked 1 through 53. Tier 2 counties are ranked 54 through 106 and Tier 3 counties are ranked 107 through 159.

Firms located in the least developed counties (Tier 1 counties) may be more likely to take the credit since the credit per job created is higher for these counties. In addition, firms headquartered in the state may be more likely to take the JTC perhaps because they have more information about tax advantages. Logit results confirm these expectations, that firms in less developed counties (those with lower tier rank) and firms that are headquartered in Georgia are more likely to take the JTC. The marginal effects show that if the county in which the representative firm is located increases in rank by 10 (*i.e.*, becomes more developed), the firm's probability of taking the JTC decreases by 2.8 percentage points and vice versa for a decrease in rank. In this analysis the representative firm is headquartered in Georgia. If the headquarter shifted outside the state, the probability of taking the credit decreases by 25.8 percentage points.

Firms that consistently have low or no state tax liability have little incentive to apply for the JTC, while firms with high state tax liabilities are more likely to look for ways to decrease this liability and are much more likely to take the JTC. In addition, firms that have previously taken the JTC are more likely to take the credit in the present tax year. Logit results confirm these expectations. The marginal effects show that increasing tax liability by $10,000 or $50,000 increases the probability of taking the JTC by about one percentage point and four percentage points, respectively. If it had taken the JTC in previous years, the probability of taking the JTC in the current year increases by 43.4 percentage points.

Start-up firms may choose a specific location because of tax advantages. They may be more likely to take the JTC since they are able to claim a credit for their entire payroll. However, firms may start up in Georgia because they can take the JTC, so the direction of causality is uncertain.[13] The logit estimates indicate that start-up firms are less likely to take the JTC. Marginal effects show

[13] The inclusion of this variable may bias the parameter estimates.

that if the representative firm had been a start up, the probability of taking the JTC would decrease by 25 percentage points.

Firms in particular industries may be more likely to take the credit, either because certain industries are more labor intensive or because they can more easily increase employment. Since firms in the manufacturing industry are relatively labor intensive, we expect that these firms will be more likely to take the JTC. However, according to the logit estimates, being in the manufacturing industry is not a significant determinant of a firm's taking the JTC. While Table 5 shows that most establishments that took the JTC were in the manufacturing industry, it is also the case that most eligible establishments that did not take the credit were also in the manufacturing industry. This explains the insignificance of manufacturing in the logit estimation. Since the type of industry is not a significant determinant of a firm's taking the JTC, marginal effects are not reported.

Do Employment Tax Credits Create Jobs?

A fundamental issue is whether the JTC resulted in an increase in employment above what would have occurred if the credit were not available. While no direct evidence exists regarding the effect of the JTC, there have been studies of the effects of other employment incentive programs that can provide some insight into this issue. This section reviews some of these studies.

Over the past two decades, several employment tax credit programs have been implemented at the federal and state levels of government. These programs can be divided into two broad categories: broad-based programs and targeted programs. Broad-based tax credits generally apply to net increases in employment regardless of the economic or geographic characteristics of the "new"

workers.[14] Targeted tax credits are intended to attract or retain a particular firm (usually large manufacturing firms) or to encourage firms to hire workers from a specific socioeconomic group or a particular geographic area, such as welfare recipients or inner-city residents.

A. Evidence from Broad-based Tax Credits

Kesselman *et. al.* (1977) conducted simulations to explore the factor substitution effects of a broad-based federal employment tax credit compared to the investment tax credit that was in place at the time. They found that total employment in the U.S. manufacturing sector would have been 0.5 to 1 percent higher with an employment tax credit than with the investment tax credit. Their findings suggest that employment tax credits are an effective means to increase employment.

The New Jobs Tax Credit (NJTC) was a federal employment subsidy implemented between 1977 and 1978, and is similar to many state-level job tax credits in that it did not target specific socioeconomic groups. The NJTC was a federal corporate income tax credit provided to employers. The credit was 50 percent of the first $4200 of wages paid to eligible workers, where eligible workers were those employees that represented a two percent growth in the firm's total employment from the previous year. The tax credit was capped at $100,000 per firm. Analysis of the NJTC shows that it had a moderate effect on increasing employment. Using survey data, Perloff and Wachter (1979) estimate that firms that knew about the credit hired three percent more workers than firms that did not know about the credit. Bishop (1981) found that the NJTC accounted for at least 15 percent of the increase in employment in the construction and retail industries between 1977 and 1978 and that the credit produced a one percent reduction in the price of commodities produced in the construction and distribution industries.

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[14] Although some industries are excluded, Georgia's JTC is broad based meaning that it is available to a large segment of the business community.

Pope and Kuhle (1996) present one of the few analyses of specific state economic development incentives. They use survey data and ANOVA to examine the effectiveness of a wages-paid tax credit and a retraining tax credit in California. California's wages-paid tax credit is similar to Georgia's JTC in that it does not target a particular socioeconomic group and is a credit for net increases in employment. They conclude that: (1) small firms (those with 100 or fewer employees) are more likely to claim a tax credit for wages paid; (2) firms view the wage-paid tax credit as a bonus or windfall; (3) retraining tax credits do not result in the retention of employees who would otherwise have been laid-off. Their findings suggest that firms do not increase employment in response to tax credits, but rather, firms make their employment decisions and then file for such credits if they meet the eligibility criteria.

B. Evidence from Targeted Employment Subsidies

There is a large literature on tax incentives developed to attract or retain specific companies such as the Saturn in Tennessee or Mercedes plant in Alabama. Estimates of tax concessions per job created exceed $26,000 and $150,000, respectively. There is no consensus on the cost effectiveness of such incentives. Brunori (1997) provides an overview of the issues surrounding these types of incentives.

An extensive literature analyzes the effectiveness of the various wage subsidies which target low-skill or disadvantaged workers.[15] Katz (1996) provides a comprehensive overview and evaluation of wage subsidies that target disadvantaged workers and draws several conclusions, including: (1) wage subsides to employers that hire disadvantaged workers modestly increase the demand for these workers; (2) wage subsidies that target a specific group have low utilization rates

[15] These subsidies have targeted various disadvantaged workers including but not limited to welfare recipients, ex convicts, disadvantaged youth, and Vietnam veterans.

(*i.e.*, few workers or firms took advantage of the credit) and such subsidies may stigmatize the recipient; (3) the Targeted Jobs Tax Credit (TJTC) modestly improved the employment of young adults and; (4) wage subsidies combined with job development, training, and job search assistance have been modestly successful at improving the employment and earnings of targeted groups.

The Targeted Job Tax Credit (TJTC) was in effect from 1979 to 1994. The credit targeted disadvantaged youths, veterans, ex-convicts and the recipients of public assistance. Eligible workers were given a voucher to present to potential employers when applying for a job. Bishop and Montgomery (1993) analyzed survey data for 3500 firms and found that seventy percent of the tax credits were payments for workers that would have been hired without the credit. Burtless (1985), using data from the Dayton, Ohio, wage voucher experiment, found that the vouchers seemingly stigmatize eligible workers and significantly reduced their chance of finding employment. Johnson (1982) points out that the effectiveness of employment subsidies in reducing unemployment depends on the pairing of targeted and nontargeted workers in the production process and the timing within the business cycle. The effect of wage subsidies during an economic expansion could be very different from the effect of wage subsidies during a recession.

One of the overriding findings in the literature on the NJTC and the TJTC is that only a small proportion of eligible firms actually take the credit. The low utilization rate apparently results from lack of knowledge of the programs. A Bureau of the Census survey for the NJTC showed that relatively few firms knew about the credit in the first year and that a significant proportion of the firms that knew about the credit were large (over 500 employees) while smaller firms (0 to 9 employees) were less likely to be aware of the program (Perloff, 1982). Obviously, lack of awareness of the program limits the effectiveness of employment tax credits.

The federal enterprise zone program, which includes employment subsidies, is an example of a program that targets employment growth on a geographic basis. Firms operating within enterprise zones can take a federal income tax credit for employing zone residents. Employment subsidies in enterprise zones effectively target employees in a particular geographic area. These employees may represent a particular socioeconomic group as well. In her analysis of Indiana's enterprise zone program, Papke (1994) concludes that unemployment claims declined by approximately 19 percent the year after an area was designated as an enterprise zone. However, Boarnet and Bogart (1995) use a similar econometric approach and find that the New Jersey enterprise zone program was ineffective in decreasing the level of unemployment in and around the designated zones. Ladd (1994) evaluates spatially targeted development strategies such as enterprise zones and concludes that they are not particularly effective in generating new jobs.

In sum, most of the current analysis on employment subsidies focuses on federal programs. More work needs to be done to examine subsidies at the state-government level. [16] Current evidence suggests, however, that broad-based employment subsidies are more likely to increase employment than programs that target particular geographic areas or socioeconomic groups. Few studies have addressed the role of such subsidies when unemployment is low or attempted to measure the effects of the subsidy on output or wage rates. Finally, the literature on employment subsidies offers little analysis of (1) the characteristics of firms that participate in employment tax credit programs or (2) the effect of state employment tax credits on a firm's input demand decisions.

[16] The author is currently working on research to determine the effect of the JTC on a firm's demand for labor.

Recommendations

The low participation rate suggests that awareness of the JTC should be improved. A small proportion of eligible firms actually participate in the JTC program, indicating that many eligible firms either do not know about the program or do not find it advantageous to participate. Including more information in the Georgia corporate income tax instruction booklet is one means of promoting the program. In addition, simplifying the application process may encourage more firms to apply for the credit, reduce the high proportion of JTC forms incorrectly filled out, and decrease the cost of administering the credit. Overall, the JTC is a small proportion of tax liability and total wages for many firms taking the credit. Increasing the amount of the credit and/or decreasing the minimum number of jobs to be created will induce more firms to participate in the JTC program; the job creation criteria was reduced for the 1996 and 1997 tax years. Additional research is needed to determine how this reduction affected the number of firms participating in the program.

The information available for the JTC provides no information about the types of jobs, skill level of the workers, or wages for the jobs attributed to the JTC. Policy makers have no idea if these are "good" jobs, or if the jobs created in the qualifying industries pay more than retail or service jobs, which are currently excluded from the JTC program. Collecting information on the wages paid for jobs attributed to the JTC and conducting a survey to determine if these workers were formerly unemployed or moving from one job to another would provide information about the types of workers and quality of jobs attributed to the JTC.

This study focused on the characteristics of eligible firms. Additional research is needed to determine if the JTC resulted in an increase in employment above what would have occurred if the credit were not available.

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APPENDIX

The model takes the form:

$P_{ij}(JTC=1) = p(S,L,T,X,u)$ $i=1...n$ and $j=1993\text{-}1995$

where $P_i=1$ if the firm took the JTC, and $P_i=0$ if the firm did not take the JTC. The subscript i indexes the firms in the sample and the subscript j indexes the year.

S represents size characteristics.

L represents location characteristics.

T represents tax characteristics.

X represents other firm characteristics,

and u is random error.

A description of variables used in the model, descriptive statistics and results of the estimation follows.

Table 16. Description of Variables Used in the Empirical Model

Variable	Description
Dependent Variable	=1 if firm took the JTC (Had a positive JTC) =0 if firm did not take the JTC or claimed 0 JTC
Tax Liability	Tax liability on Georgia Corporate Income Tax Return
Rank	Tier ranking of county where firm is located
Employment*	Average number of employees in tax year
Headquarters Location	=1 if firm's headquarters is in Georgia =0 otherwise
Previous JTC	=1 if firms took JTC previously =0 otherwise
Manufacturing Dummy	=1 if the firm is in the manufacturing industry =0 otherwise
Start up	=1 if the base year employment was zero. (The firm recently opened.) =0 otherwise

* For multi-establishment firms, I use average annual employment of all establishments participating or eligible to participate in the JTC program.

Table 17. Summary Statistics

Variable	Mean	Standard Deviation	Minimum	Maximum
Income Tax Liability (scaled by 10,000)	$27.85	$74.25	0	$517.41
Rank	63.80	45.49	1	159
Employment*	581.63	960.04	11	7002
Headquarters dummy	0.52	0.50	0	1
Previous JTC	0.29	0.45	0	1
Manufacturing dummy	0.87	0.33	0	1
Start-up dummy	0.26	0.44	0	1
Obs.=143				

Table 18. Logit Results

Variable	Parameter Estimate	Standard Deviation
Intercept	-0.4957	0.9751
Income Tax Liability*	0.0392	0.0112
Rank**	-0.0113	0.00611
Employment*	-0.00096	0.000471
Headquarters dummy*	1.1416	0.4969
Previous JTC*	2.6472	0.5794
Manufacturing Dummy	-0.5881	0.7720
Start-up Dummy*	-1.1531	0.5879

* significant at the 95 percent confidence level.
** significant at the 90 percent confidence level.

Goodness of Fit of the Model

If we assume that firms with a predicted probability of taking the credit of 0.60 or higher will take the credit, then the model predicts the correct response 79 percent of the time, which indicates that the predictive power of the model is good. For firms that actually took the credit, the model correctly predicts that firms will take the credit 79 percent of the time. For firms that did not take the credit the model incorrectly predicts that they will take the credit 21 percent of the time.

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